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A Critical Evaluation of Pica's Article on the Selective Impact of Classroom Instruction on Second Language Acquisition

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Abstract

In an influential study by Pica in 1985 it was found that the effectiveness of classroom instruction may be predicted by the complexity of the target structure. This paper re-examined Pica's findings in the light of more recent SLA research. It found problems with the design of the study and that significant factors such as stage of learner development, L1 influence and method of instruction had not been adequately accounted for.

Introduction

Research findings into second language acquisition provide language teachers with valuable information about the learning process. They are increasingly used to inform both syllabus design and EFL methodology. This paper examines one such important study that was reported in Pica's 1985 article on the selective impact of instruction on morpheme acquisition. It examines the way in which the study was conducted and places its findings in the context of more recent second language acquisition research. It then evaluates the implications its findings have for classroom practice.

The essay consists of five main parts: a background section describing the study and its findings, followed by a section exploring possible design and theoretical question marks influencing the extent to which conclusions may be drawn. There follows a section putting Pica's work in the context of other, similar research. And finally, in the light of these considerations, there is an implications section and a conclusions section.

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Background

Pica's work was inspired by the Larsen-Freeman studies (1975, 1976) which looked at the morpheme production accuracy of a group of second language learners' spoken and written output and suggested, "the more frequently a stimulus is encountered, the more rapidly it will be acquired" (1976 : 133). This finding was somewhat challenging to the established assumption underpinning the design of many language teaching materials. Namely, that the linguistic complexity of items dictates the ease with which they can be produced and acquired by the learner. Thus, frequently, language teaching materials sequence items to be presented in an order of perceived linguistic complexity.

Whereas the Larsen-Freeman studies had looked at learners who had acquired their language both inside and outside the classroom, Pica's study set out to investigate how a cross-section of learning environments impacted on learners' production accuracy of morphemes of varying linguistic complexity to see what affect this might have. It was felt that by studying the effect that these two factors have on learners' production accuracy, greater insight might be gained into how linguistic complexity determines ease of acquisition. This then, it was argued, may help to "verify" whether syllabus designers were justified in sequencing items according to considerations of linguistic complexity (1985 : 217).

Pica's study was also influenced, in part, by Krashen's ideas on the 'learnability' of structures. On formulating his theory of second language acquisition, Krashen made certain rather strong claims about the effectiveness and scope of classroom instruction. He claimed that there are certain structures that cannot be taught, as they are not 'learnable', and that some morphemes are more 'learnable' than others because of their relatively low degree of linguistic complexity (1982 : 115). Thus, one aim of Pica's study was to "verify" these claims (1985 : 217).

Design

The study investigated the development of three grammatical morphemes in three groups of adult native Spanish learners of English.

The morphemes selected were plural '-s', progressive '-ing' and article 'a'. Although Pica accepts that there are difficulties in defining linguistic complexity (1985 : 215-7), she believes the order in the above represents an order of increasing difficulty. She bases this assertion on the 'transparency' of the morphemes' form-

function relationships and the number of derivational rules required for accurate use.

The three groups of learners came from three, distinct, learning backgrounds. One of the groups had received formal instruction only, one had learnt English in an exclusively naturalistic environment and the other group had learnt English through a combination of the two.

Data was collected through informal conversations, which was felt to be in keeping with Krashen's arguments (1981 in Pica, 1985 : 215), which state acquisition (as opposed to learning) can be shown if the conditions allow spontaneous, unmonitored production.

The Pica study was praised because it was the first of its kind to take consideration of language production in non-obligatory contexts (Ellis, 1994 : 94-5), (Gass and Selinker, 1994 : 45). That is to say, it took account of factors such as over-generalisations. From a statistical point of view, this is significant. In fact, Pica herself demonstrated how some of her results on accuracy scores could actually be reversed if she used a formula that didn't incorporate this factor (1984 in Gass and Selinker, 1994 : 45).

Findings

For article 'a' production, there tended to be a similar developmental sequence across all three groups. Firstly, accurate use of 'a' appeared in set phrases such as 'a few', 'a little' etc. In subsequent developmental stages it appeared in verb and prepositional object structures, such as 'on a chair', 'saw a movie' etc. Pica concluded, "Instruction appeared to be of no consequence in production patterns of this complex grammatical morpheme" (1985 : 217).

By contrast, for the relatively 'simple' plural '-s' morpheme it was found that the 'instruction only' group exhibited a higher rank order of production accuracy than the learners from the other groups. The untutored group fared worst, tending to express plurality via a free-form quantifier such as 'many', 'a few' etc. Thus, utterances comparable to pidginized languages were found, such as 'a few month' and 'many friend'. In both the groups that had received classroom instruction it was found that this tendency was greatly reduced.

One reason offered for the relative lack of success for the untutored group in acquiring plural '-s', is that it, "may be quite imperceptible in the stream of conversational speech". This position was maintained in a more recent article by

the same researcher (Pica, 1994 : 66).

Although this explanation would seem logical, what it fails to account for is the imperceptibility of article 'a' in 'conversational speech'. It is possible, that 'a', particularly in its unstressed form, is even more difficult for learners to perceive than plural '-s'. Thus, following Pica's line of argument, one might expect the untutored group to fare worst in article 'a' production also. This was shown not to be the case, throwing doubt on the explanation.

Turning to the results for progressive '-ing', it was found that the rank order of accuracy for the 'instruction only' group was the lowest of the three, due mainly to a tendency towards overuse. A suggested reason advanced by Pica, was that the learners may have been "confused by the several possibilities for using '-ing'" (1985 : 220). The result also seemed to confirm a hypothesis from an earlier, related article, which predicted overuse as the learners, "know the form but do not yet know its distribution" (Pica, 1983 : 477).

In any case, the results for all the groups for '-ing' were not positive, as members from the uninstructed group had their own separate production problems. In their case, there was a tendency towards omission.

Pica's conclusions

These results led Pica to suggest that the effectiveness of instruction may be dependent on the complexity of the target structure being taught. Thus if the structure possesses a 'simple' form-function relationship (as with plural '-s'), instruction may result in improved production accuracy. If it has a simple and salient form, but is functionally quite complex (as with progressive '-ing'), instruction may help learners with the form, but may also give rise to lots of errors. If a structure lacks saliency but is functionally highly complex (as with articles), instruction may make no difference. She concluded from these findings, that more complex areas of target grammar might be excluded from explicit classroom presentation.

Pica's findings, then, appear to confirm Krashen's claim on 'learnability', as well as to challenge much established classroom practice. However, they are weakened by problems with the design.

Problems/Complications

The design of the Pica (1985) study was described in greater detail in Pica

(1983). It is perhaps appropriate that we first turn to Pica's own comments regarding the strength of her findings.

Firstly, she accepts that there may have been problems with "individual variation" as, "With only 18 subjects, the sample size was quite small" (1983 : 494). In fact, when one looks at how the study was conducted, it can be seen that the actual sample sizes were even smaller. We saw in the above that there were three groups under consideration. Thus, only six subjects represent a particular type of target language exposure. But, on top of this, each group was split between two beginner level, two intermediate and two advanced intermediate level learners (Pica, 1983 : 472). This leaves us with a mere two subjects representing a particular proficiency level from a particular type of exposure. It is possible, therefore, that individual differences affected the reliability of these results. A related study by Ellis (1984), for example, on the effects of formal instruction, served to illustrate how pronounced individual differences can be, across a group of learners. In fact, Larsen-Freeman isolates this very point as one key finding of second language acquisition research relevant to teachers, concluding that there is, "tremendous individual variation among language learners" (1991 : 337).

An equally serious point, relating to design validity, is that not all the learners in the sample spoke the same dialect of Spanish. This is important, as Spada and Lightbown (1996 : 59), on reviewing "all the morpheme acquisition studies" conclude that learners' first language has an "important influence" on their acquisition of grammatical morphology, and can potentially retard acquisition of particular items.

In the Pica study, "three of the naturalistic and three of the mixed subjects spoke a variety of Spanish in which final '-s' is optionally deleted". It was found that five of these six subjects scored "substantially lower" on plural '-s', "relative both to their other morpheme scores and to their group's rank for this morpheme", (1983 : 488). In other words, the reason for the instructed group's relative success in its plural '-s' scores (see above) may simply have been that it was not subject to negative transfer from native dialect.

Pica (1983 : 494) concedes that this may have been "a confounding factor", limiting the extent to which the learners' morpheme accuracy scores can be attributed to the type of language exposure.

A further significant 'confounding' factor relates to what is now known about

the nature of second language acquisition. There is broad agreement in the literature that the process of acquisition is not a linear one, and, in fact, it is “more U-shaped than smoothly ascending” (Larsen-Freeman, 1991 : 318). It is believed that this ‘U-shaped’ development is caused by reorganisation of a learner’s ‘interlanguage’ (‘interlanguage’ being defined as the knowledge a learner has of a second language that is independent of both the target language and the learner’s first language (Ellis, 1997 : 140)). That is to say, as new language is acquired the learner may alter his or her existing knowledge to try and fit it in with the new information. Ellis terms this effect “restructuring”, and points out that consequently learners “may appear to regress whereas in fact they are advancing” (1997 : 23). He illustrates this point through the example of the irregular verb “to eat”. In acquiring the past tense form of this verb, learners may pass through as many as five stages of development :

Stage1- ‘eat’

Stage2- ‘ate’

Stage3- ‘eated’ (an overgeneralisation of regular past tense form)

Stage4- ‘ated’ (a hybrid form)

Stage5- ‘ate’

(Based on Ellis, 1997 : 23).

As we can see from the above, learners may have appeared to acquire a form even though they are only at an early stage in the sequence of acquisition. Conversely, learners at a later stage of acquisition could appear to be doing worse than those at an earlier stage, due to, say, overgeneralisations.

In Pica’s study, morpheme *accuracy* was assessed and from this, conclusions were drawn as to whether the morphemes considered were amenable to classroom instruction. Given that there is a ‘U-shaped’ development in acquisition, it may be that the learners’ measure of morpheme *accuracy* does not necessarily correlate to their stage of *acquisition*. For example, the overgeneralisation problems reportedly found for the instructed group, in their use of ‘-ing’, could reflect the fact that they are further along the sequence of acquisition than the other groups, and thus the instruction is having a *positive* influence. Once again, coming back to the point that there were only *two* students at a particular proficiency level in each group, and that with such a vast variety of factors governing learners’ interlanguage development, it is hard to say, exactly, what effect classroom instruction is having on

learners' *acquisition* of the morphemes considered.

A further question mark relating to the reliability of the study, is consideration of the *nature* of the instruction the learners received. As Cook (1991 : 89) points out, it is incomplete to speculate about the effects of teaching grammar without considering *how* it is taught.

We know, for example, that article 'a' was taught differently between the mixed and instructed groups (Pica, 1985 : 218). This would seem to inhibit a fair comparison between the two groups in their production of this grammatical item.

Other than this, we know that the material was presented sequentially in order of perceived linguistic complexity and that "Classroom lessons included both explicit grammar instruction and communicative practice activities, and provided opportunities for teacher feedback on their production of English" (Pica, 1983 : 472).

Around about the same time as the Pica article was published, Pienemann was advancing his teachability hypothesis :

"instruction can only promote language acquisition if the interlanguage is close to the point when the structure to be taught is acquired in the natural setting (so that sufficient prerequisites are developed)" (1985 : 37).

In other words, the learner must be 'ready' to acquire a new structure when he or she is taught it. This hypothesis was supported by a later study (Pienemann, 1997 in Ellis, 1994 : 632), which demonstrated the "deleterious effect of premature instruction". With this in mind, one wonders, therefore, how 'ready' the students were to receive instruction in the less successfully produced morphemes of '-ing' and article 'a'. It could be that the apparent lack of success in these two morphemes was not due to their inherent linguistic complexity, but to the point in the syllabus at which they were presented to the learners. That is to say, that it may simply have been the instruction, and not the linguistic complexity, which was the principal factor in influencing Pica's findings.

It could be argued then, that there are not just practical problems relating to the design of the study, but also theoretical ones. These weaknesses limit what can be inferred from this, one, study. However, other studies similar to Pica's have been performed, and it is those that we will look at next.

Similar Studies

We saw in the above how a study by Ellis (1984) served to highlight individual differences across a group of instructed learners. What that study set out to determine was whether formal instruction aided students' ability to produce 'wh' -questions more accurately in spontaneous speech. It was found that, overall; it did not; although some learners did improve "substantially" (Ellis, 1984: 150). The overall failing in this instruction was later accounted for by the structure being, "too far in advance of the learners' stage of development" (Ellis, 1994: 617). This again seems to accord with Pienemann's 'Teachability Hypothesis'.

Unsurprisingly, no direct replication of Pica's (1985) study has yet been performed, however certain studies do seem to corroborate her findings. For example, a study by Lightbown, Spada and Wallace (1980 reported in Ellis, 1994: 620) found that production accuracy for plural '-s', together with a range of other linguistically 'simple' morphemes, improved significantly as a result of formal instruction. This experiment was performed on a far larger sample of learners than in the Pica study. In this case, though, the sample comprised French-speaking school learners of English.

Also, a study by Lightbown (1983 in Ellis, 1994: 621), again on French speaking learners, found a tendency in learners to overuse the morpheme '-ing' as a result of classroom instruction, much the same as in the Pica study. On summarising this, and a number of other studies where instruction had a deleterious effect on production accuracy, Ellis points out that certain types of instruction potentially distort, "the input made available to the learner and thus prevents the normal processes of acquisition from operating smoothly" (1994: 621).

Turning now, to linguistically more complex structures, a study by Kadia investigated the effect of instruction on a Chinese learner's acquisition of ditransitive and phrasal verb constructions. She came to the conclusion that, "formal instruction seemed to have very little effect on spontaneous production, but it was beneficial for controlled performance" (1988: 513). It is possible that these reported improvements in controlled performance may be indicative of greater eventual acquisition. In the Pica study, learners' controlled performance was not assessed.

All these studies would seem to lend a degree of support to Pica's findings, although it is important to bear in mind that the context in which Pica's study was

carried out is somewhat different to those described above. For example, none of the above looks at Spanish learners (we saw in the previous section that native language transfer plays a significant part in second language acquisition).

Furthermore, there have been a number of studies, which have shown that acquisition of certain more 'complex' structures can be aided by formal instruction. For example, a study by Harley (1989 in Ellis, 1994 : 623) set out to teach a group of French immersion students the difference between the 'passe compose' and 'imparfait' using a set of carefully designed functional-grammar materials. It was found that eight weeks of instruction resulted in significant improvements in accuracy in both planned and unplanned language use. This lends some support to the speculation above that a possible reason for the problems reported in the Pica study, regarding the students' overuse of morpheme '-ing', was the nature of the instruction received rather than the complexity of the structure.

On reviewing a number of studies into the effects of classroom instruction on production accuracy, Ellis concludes however, that "formal instruction can result in definite gains in accuracy", particularly if the structure is 'simple' and the instruction is extensive and well-planned (1994 : 623). For more complex grammatical structures, he believes that success depends on learners' current interlanguage. If the structure is too far above this interlanguage then learners may only manifest noticeable improvements in planned language use, with unplanned use showing erratic and idiosyncratic deviations. It is possible, he argues, that in this case the instruction may be having a delayed effect.

More recently, Ellis has attempted an interpretation of the above findings in terms of another factor ; namely the distinction between 'item learning' and 'system learning'. In 'item learning' students learn a structure as an unanalysed whole or chunk. In 'system learning' students learn the underlying rules governing the grammatical correctness of structures (1997 : 13). He suggests that with more complex systems, such as the article system, it could be that instruction is only effective when structures are taught as items (1997 : 81).

With these points in mind then, we will now examine the implications of Pica's study.

Implications

If the validity of Pica's findings is to be accepted, and the studies outlined in the above suggest that there are some grounds for doing so, there are some interesting implications for the classroom.

Firstly, and importantly, it helps give teachers realistic expectations of what they can achieve through instruction. For example, if as suggested, instruction makes little difference to learners' accuracy in using the article system, then the teacher who is aware of this would not be unduly worried by persistent student error in this area.

Furthermore, the above also suggests that teaching a particular item is not necessarily going to lead to its acquisition. Being aware of this, as Lightbown suggests, may help to remove "anxiety" about the effectiveness of ones' own teaching (1985 : 182).

Another implication of these findings is that it could help increase efficiency in the classroom by informing instructors of what to teach. Thus, if certain structures cannot be effectively taught via a direct presentation stage, then they should be excluded from this in order to concentrate on structures that are more amenable to explicit instruction. But, as Pica herself points out, this necessitates that alternative ways be found for assisting the acquisition of these more complex structures in the classroom, and, as yet, little research has addressed this issue (1985 : 221). Thus, teacher intuition is relied upon to assist acquisition of more complex items. As Cook (1991 : 26) puts it, "a different decision may have to be made for each area of grammar and each stage of acquisition".

However, the notion that second language acquisition research findings can reliably inform teachers of what to explicitly teach has been rejected. Both Lightbown (1985 : 180) and Larsen-Freeman (1991 : 338) argue that the information so far gleaned from research, is simply too incomplete to start applying to the classroom.

A key objection raised by Lightbown is that, too often, research recommendations are "based on overinterpretations of the data" (1985 : 180). This is a critical point in discussing the conclusions of Pica's article. Although her findings "suggest" that more complex structures be excluded from direct classroom presentation, it does not follow that a comparison for production accuracy between classroom learners and naturalistic learners can determine whether or not items should be taught through direct presentation. To properly address this question would

require separate research comparing the effects of this variable across two *instructed* groups.

What can be said though, is that her study has opened up this line of inquiry. If, as suggested by Ellis in the above, the essential factor governing successful instruction in complex linguistic structures is whether they are taught as items or systems, then future research may help to confirm or reject this hypothesis.

In summary then, the implications of Pica's study may have a rationalising and positive effect on teacher expectations, but as far as informing methodological issues, it raises more questions than it answers.

Conclusion

This article set out to evaluate the ideas and implications of Pica's 1985 article on the impact of instruction on learners' production accuracy across three morphemes of varying linguistic complexity. It was found that there were problems with the study from both a practical and theoretical perspective which limit the extent to which conclusions can be drawn. There are a number of other possible complicating factors, such as differing lengths of target language exposure, and differing techniques to measure the sample learners' proficiency which have not been discussed here.

It was shown that, to an extent, Pica's findings are supported by a number of similar studies. In the light of this, some implications relating to teacher expectations rather than classroom practice were suggested.

Given the vast number of factors involved, and the number of simplifications that had to be made in order to reduce the research data to the two factors ; namely linguistic complexity and learning background, perhaps the best advice, is suggested by Lightbown (1985 : 180), namely that teachers should treat such findings with caution.

Bibliography

- Cook, V. (1991). *Second Language Learning and Language Teaching*, London : Arnold
- Ellis, R. (1984). Can syntax be taught? A study of the effects of formal instruction on the acquisition of WH questions by children, *Applied Linguistics* 5/2 : 138-155
- Ellis, R. (1994). *The Study of Second Language Acquisition*, Oxford : Oxford University Press

- Ellis, R. (1997). *Second Language Acquisition*, Oxford : Oxford University Press
- Gass, S. and Selinker, L. (1994). *Second Language Acquisition : An Introductory Course*, London : Lawrence Erlbaum Associates
- Kadia, K. (1988). The effect of formal instruction on monitored and spontaneous naturalistic interlanguage performance, *TESOL Quarterly*, 22 : 509-515
- Krashen, S. (1982). *Principles and Practice in Second Language Acquisition*, Oxford : Pergamon
- Larsen-Freeman, D. (1975). The Acquisition of Grammatical Morphemes by Adult ESL Students, *TESOL Quarterly*, 9/4 : 409-419
- Larsen-Freeman, D. (1976). An Explanation for the Morpheme Acquisition Order of Second Language Learners, *Language Learning*, 26/1 : 125-135
- Larsen-Freeman, D. (1991). Second Language Acquisition Research : Staking Out the Territory, *TESOL Quarterly*, 25/2 : 315-350
- Lightbown, P. (1985). Great Expectations : Second-Language Acquisition Research and Classroom Teaching, *Applied Linguistics*, 6/2 : 173-189
- Pica, T. (1983). Adult Acquisition of English as a Second Language under Different Conditions of Exposure, *Language Learning*, 33/4 : 465-497
- Pica, T. (1985). The Selective Impact of Classroom Instruction on Second Language Acquisition, *Applied Linguistics*, 6/3 : 214-222
- Pica, T. (1994). Questions From the Language Classroom : Research Perspectives, *TESOL Quarterly*, 28/1 : 49-79
- Pienemann, M. (1985). "Learnability and syllabus construction" in Hylltenstam and Pienemann (eds.) *Modelling and Assessing Second Language Acquisition*, Clevedon, Avon : Multilingual Matters
- Spada, N. and Lightbown, P. (1996). *How Languages are Learned*, Oxford : Oxford University Press